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ABSTRACT

This practicum involved finding a solution to the problem concerning the lack of time classroom teachers had in providing remedial or enrichment mathematics activities for students in grade 2 of a Lee County, Florida elementary school. The target populations was a second grade class that consisted of an average of 23 public school students. Goals of the study were: (1) to provide human and specific material resources to remediate and/or enrich mathematics skills of target students; (2) to have parents of target students become involved with the mathematics remediation/enrichment of their children; and (3) to increase the number of students having a positive attitude toward mathematics. These goals were met by having parents become involved in mathematics "make-and-take" workshop activities, utilizing cross-age tutors, using parent volunteers, and compiling a collection of remedial/enrichment activities for students to use at school and at home. All of the target students received increased remedial/enrichment help in mathematics. All of the target students had parents become involved in some manner with the mathematics remedial/enrichment activities. By the end of the implementation period of the practicum, 100 percent of the students indicated a positive attitude toward mathematics. (Author/JN)

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Providing Human and Material Resources to Remediate and Enrich Math Skills of Second Grade Students

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Providing Human And Material Resources To Remediate And Enrich Math Skills Of Second Grade Students

by

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A Practicum Report Presented to the Ed.D. Program
in Early Childhood
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

NOVA UNIVERSITY

1985

PRACTICUM APPROVAL SHEET

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12/6/85
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Reviewer

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ABSTRACT

Providing Human and Material Resources to Remediate and Enrich Math Skills of Second Grade Students. Beluschak, Elaine B., 1985: Practicum Report, Nova University Ed.D. Program in Early Childhood.
Descriptors: Mathematics Instruction / Mathematics Curriculum / Tutoring / Tutorial Programs / Elementary School Mathematics / Parent Participation / Remedial Mathematics / Parent School Relationship / Individual Differences

This practicum involved finding a solution to the problem concerning the lack of time classroom teachers had in providing remedial or enrichment mathematics activities for grade two students. The target population was a grade two class that consisted of an average of 23 students in a public school.

The writer's goals were to: (1) provide human and specific material resources to remediate and or enrich math skills of target grade two students; (2) to have parents of target students become involved with the math remediation/enrichment of their children; and (3) to increase the number of students having a positive attitude towards mathematics. The goals were met by: (1) having parents become involved in math make-and-take workshop activities; (2) utilizing cross-age tutors; (3) using parent volunteers; and (4) compiling a collection of remedial/enrichment activities for students to use at school and at home.

All of the target students received increased remedial/ enrichment help in mathematics. All of the target students had parents become involved in some manner with the math remedial/enrichment activities. By the end of the implementation period of the practicum, 100% of the students indicated a positive attitude towards mathematics.

CHAPTER I

INTRODUCTION

Description of Community and Author's Worksetting

Lee County, Florida is one of the fastest growing metropolitan statistical areas in the United States. Cape Coral is the most populous city in Lee County and continues to show a much larger growth rate than other cities in Lee County (Population Program Bureau of Economic and Business Research, 1983). When Cape Coral became a city in 1970, its population was 11,470 (Metropolitan Fort Myers Chamber of Commerce, 1984). In 1984, Cape Coral's population was 43,016. The median household income in 1979 was $17,202 (Information Services Department, County of Lee, Florida, personal communication, December 18, 1984). The Caloosahatchee River separates Cape Coral, Florida from Fort Myers, Florida.

Caloosa Elementary School, located in the northeast section of Cape Coral, was one of 28 elementary schools governed by the District School Board of Lee County in the fall of 1984. The school population consisted of approximately 900 students in grades kindergarten through fifth. The school population was drawn from Cape Coral, North Fort Myers, and Fort Myers. Approximately 17% of the student population consisted of minorities, 75% of the total population was bused to school and 33% of the students qualified for free or reduced lunch. There were 34 classroom teachers, a principal, and an assistant principal in Caloosa Elementary School.

In addition, the school had the following support teachers: art, music, physical education, media specialist, two guidance counselors, varying exceptionalities, Primary Education Program (Prep) specialist, resource learning disability, speech, gifted, and two Chapter I reading teachers. Additional personnel included a school psychologist, bilingual tutor, visiting teacher, and a school nurse (Santini and Zenoniani, 1984). In addition, each teacher in grades one through three had a part-time aide. The aide worked in the classroom 1½ hours each day.

Many new students enroll in the school each month. Several of the students new to the school come from out of state or out of county. Some of the new enrollees are transfers from nonpublic schools enrolling in a public school for the first time. Due to the continuous increase in Caloosa's student population, the building of two additional elementary schools in Cape Coral and a redistricting of Caloosa's school boundary lines have occurred during the last six years.

The setting in Caloosa Elementary School is one in which each year many students, who are unfamiliar with the reading and mathematics programs of the District School Board of Lee County enter the school. Reading and mathematics inventories must be given to each child new to the school system. Some of the new students test below grade level expectations or show areas of weakness on the inventories given to them. The students are placed in classrooms according to their reading levels. Any remediation or enrichment needed by the students must be done by the classroom teacher. The Prep specialist helps classroom teachers develop some remedial and enrichment strategies for individual students.

Description of Students Involved

The practicum was concerned with the population of one second grade classroom. At the time of the practicum proposal 23 students were enrolled in the class. There were six second grade classes that had been grouped heterogenously according to reading levels. Within each of the second grade classes, some students were working below grade level expectations in mathematics. The District School Board of Lee County has a math program in which children are placed at a particular math level after being given a math inventory. If the children achieve 80% mastery of the test items on the math inventory they are placed at what is called the developmental math level. If a child does not achieve 80% mastery on the math inventory for his grade level he is given the math inventory for one or more levels below his grade until mastery is achieved. Those not achieving 80% mastery on the initial inventory are most often placed at what is called the fundamental level at his particular grade level.

During the practicum implementation period 27 math skills were covered in the grade two math program (Appendix A). Whether a child was working at the grade two fundamental math level or grade two developmental math level, he was still working on second grade math skills. The second grade students were tested on each of the 27 grade two math skills. However, the fundamental level child was tested at a lower level of skill mastery.

Some of the students in class scored below grade level expectations on the California Achievement Test given in Spring, 1984. There were students in the classroom doing average to above average work in math that did some math enrichment activities.

Author's Role and Responsibilities

The author of this practicum is one of six grade two teachers at Calcoca Elementary School. The grade two teachers are responsible for planning and teaching all subject areas except physical education, art, and music to an average of 25 students. Moreover, the author plans the remedial and enrichment activities for the students in her classroom. The grade two teachers are responsible for helping their students learn how to use computers and software for approximately nine weeks each school year. Furthermore, the grade two teachers are involved with preparing their students for a grade level program that is presented to the entire school.

The author has a remedial reading experiential background, having taught Title I reading for four years. While teaching Title I reading, the author planned individual reading programs for each of her students and held reading workshops for parents of Title I reading students. The remedial reading background has helped the author plan activities for small groups and individual students in her grade two classroom.

CHAPTER II

STUDY OF THE PROBLEM

Description of the Problem Situation

There was not enough time for paid personnel to give all the children the help they needed in mathematics. The grade two teachers allocated 50-60 minutes daily for mathematics instruction. Within the mathematics period skills were introduced, practice work was provided, previously introduced skills were reviewed, some skills were tested, and individual help was provided. If a child was having a particular problem in mathematics, it was difficult within the mathematics timeframe to provide the individual help on a repeated basis. The teacher's aide was not always available during the math period in each of the grade two classes. As stated in Chapter I 27 skill areas were tested in the second grade math program. After being tested on each skill, some students needed to be remediated on a skill or enriched. The students not mastering a particular math skill needed to be remediated and retested on the failed skill. At the time of the practicum proposal there was not a file of specific remedial and enrichment activities corresponding to the grade two testing program.

In addition to teaching mathematics, the grade two teachers' time was devoted to planning and teaching spelling, at least three reading groups, handwriting, language, social studies, science, and health. Briefly stated then, the problem was that in second grade at Caloosa Elemen-

tary School there was not enough time for the teachers to provide all the children the remedial and enriched help needed in mathematics within the allocated math period and still continue to introduce, develop, and test students on other topics in the mathematics curriculum.

Problem Documentation

On the 1983-84 California Achievement Test given to the first graders at Caloosa Elementary School, 14 students scored below the norm of 1.6 on the total math battery. In addition, there were 22 second graders that scored below the 2.6 norm on the total mathematics battery. At the time of the practicum proposal 13 second grade students were being tested at the second grade fundamental math level.

The author of the practicum gave a questionnaire concerning the mathematics program to the six grade two teachers (Appendix B) in December, 1984. In addition to teaching students at the fundamental level, the teachers encountered students at the developmental level that did not master a specific math skill test. These students needed to be remediated. After students were tested on math skills, the number of students in each class needing remediation ranged from 5-8 students. The developmental level students not mastering specific math skills comprised the majority of students needing help with math in the second grade. When a student needed to be remediated on a math skill, five of the six second grade teachers responded that they and their prep aides did the remediation. One teacher responded that she did all the remediation. Four of the six teachers noted that their aides did not have much time ($1\frac{1}{2}$-3 hours a week) for math remediation. When an aide did remediation or enrichment in class, the aide's time was taken from other areas such as reading and language.

None of the six teachers of second grade felt they had time during the allocated math period to meet individual math needs. The reason given for not being able to meet all the individual needs was that the teachers used the math period for the development and practice of the current lesson. Four of the six teachers gave math homework on a regular basis during the week. Three of the four teachers assigning homework gave drill homework. One of the teachers gave math enrichment homework.

All six teachers indicated that a "pull out" math program that would supplement the current math program would be beneficial to students in the second grade. It was the consensus of the teachers that the students would get more individual attention in small group instruction. However, one teacher was concerned about students missing instruction in other subjects while attending a "pull out" math program. The teachers had some enrichment and remedial materials available.

The target students for this practicum were in the author's grade two classroom. Every student in the class was eligible for being a target student. There were students being tested at the fundamental level and there were students needing remediation and enrichment after being tested on skills at the developmental level.

Six questions were posed to students in the targeted second grade class (Appendix C). In December, 1984, 23 students responded to a student math attitude questionnaire. Math was sometimes, usually, or always difficult for 11 students. Thirteen students responded that they sometimes, usually, or always needed help with math. Of the target population, 12 students responded that they sometimes, always or usually liked math. In addition, 14 of the students responded that they would always like to play math activities at home. When the targeted students were

questioned concerning the need for more difficult math work, 11 of the students responded that they never need "harder" math work while 12 of the respondents indicated they sometimes, usually, or always need "harder" math work. Concerning parental help with math, 11 students responded that their parents never or seldom help them with their math.

Causes of the Problem

As stated in Chapter I, new students continuously enrolled in Caloosa Elementary School throughout the school year. For example, during the second quarter of the 1984-85 school year three students new to the Lee County School System enrolled in the author's classroom. The students needed to be tested for placement in the county mathematics program. If students needed to be remediated, it was the classroom teacher's responsibility to provide the remediation. For the 1984-85 school year, each grade two class size averaged 25 students. There had been school years such as 1983-84 when the average class size was approximately 30 students.

The mathematics period followed the reading period in the classrooms and lasted for 50-60 minutes. In most classes, the teacher's aide was in the classroom during the reading period and primarily helped students with reading, spelling, and language activities. There was no "pull out" math program available for children having difficulty with math as there was for reading. For children having difficulty with reading, a Chapter I reading program was available. If the children met the criteria to participate in the reading program, they met with a reading teacher and aide five days a week for 30 minutes in a group of ten or less students. However, if a child had a specific learning disability in mathematics, he/she could attend a specific learning disability class on a resource basis.

All of the second grade classes were self-contained. Each classroom teacher planned activities for all subject areas which included three to four reading groups. Much of each teacher's time was used testing students on reading and math skills and recording reading and mathematics test results. During the 1984-85 school year, a new reading program had been implemented in the school system. Becoming familiar with the new reading program and computer and software used in the program took much of each instructor's planning time.

In summary, planning activities for several subjects, orienting new students to the school, becoming familiar with a new reading program, and doing clerical work left the grade two teachers with little time to plan a remedial or enrichment math program for the second grade level.

Relationship of the Problem to the Literature

Larson (1983) states that teachers usually allocate twenty minutes to an hour daily for mathematics instruction. Moreover, a study reported by David C. Berliner (cited in Larson, 1983) indicates that allocated time does not always equal the actual instructional time. Some allocated instruction time during the school year is lost due to such events as teacher absences, parties, field trips, programs, standardized testing, behavioral management and transition. Facing limited time during the school day, teachers must make decisions about how best to use the available time. According to Suydam (1984), research indicates that time, especially the time a student is on task, is a variable in determining achievement. She suggests to enhance achievement in children, keep children involved in the lesson whether they are working individually or in a group. Moreover, she states that another variable in determining a

child's achievement is how the child feels about his or her ability to do mathematics. Sobel comments (cited in Suydam, 1984) that the slow learner in junior high school needs to experience success. The child's attitude toward mathematics must be made favorable and the child must be stimulated. Suydam (1984) believes these needs apply to elementary level students too.

According to Bloom (1984), two University of Chicago doctoral students, Anania and Burke compared student learning under one-to-one tutoring, mastery learning, and conventional group instruction. In conventional and mastery learning students learn the subject matter with about 30 students per teacher. In tutoring, students learn the subject matter with a tutor for each one to three students. In the conventional learning, tests are given to determine student marks. In mastery learning, tests are given, correction procedures are implemented, and students are retested. The tutored students are tested, remediated as necessary, and retested to determine mastery. It was found that the students instructed by the tutoring method outperformed 98% of the students taught by conventional means and 84% of the students taught by the mastery method. Although the three groups had the same amount of instruction time, the mastery learning and tutoring groups had additional time for corrective work.

According to Rubin and Spady (1984) among the problems most schools want to confront are restrictions on teaching time and instructing individual students at their level and rate of learning. The Center School in New Canaan, Connecticut has implemented what is called outcome-based instructional delivery. By utilizing outcome-based instructional delivery, students are moved through the curriculum based upon their learning achievement instead of a predetermined schedule. The students are placed

in task assignment groups. The students in particular groups have a specific skill to learn and have the prerequisites to handle the skill to be introduced. The students are placed in groups according to needs instead of being placed in a permanent instructional group according to age and ability.

Suydam (1984) states that finding the cause of a child's problem with a particular math skill is of utmost importance. The teacher needs to identify the mathematic ideas giving the student difficulty and assess the child's learning style, interests, and talents. Suydam (1984) feels there are guidelines, supported by practice and research, that are applicable for the remediation of some students. It is important to build the child's self-concept, come up with remedial ideas based on the child's strengths and interests, give feedback and reinforcement as soon as possible, expect achievement from every child, actively involve the child in the learning process, and provide manipulative materials.

The goal of remedial activities is to eliminate the cause of the problem. Berman and Friederwitzer (1981) discuss a variety of place value errors students make in addition and subtraction. They believe the diagnostic prescriptive approach seems to be of much value in remediating errors. Teachers must note the specific error patterns in their students' work in order to plan a remedial program for their students. The diagnostic process should not just be looking for children's errors but for their strengths and building on their strengths. After teachers note which error patterns occur, they must then analyze the errors and see why they occur. Students' regrouping errors in addition and subtraction operations could be due to several causes or combinations of causes. Errors could result because of a child's learning style, a lack of being able

to explain a mathematical concept verbally, a lack of experience in manipulating concrete objects and a lack of understanding the algorithm being used. Listening to a child describe how an example was done provides insight into a child's thinking process and arithmetical strategies being used. Having the child illustrate the problem in picture form and explaining the picture gives the teacher a clearer understanding of a student's thinking and may note a specific difficulty.

Cox (1975) discusses identifying systematic errors in addition and subtraction computations. She confronts the argument that teachers need not be concerned with computational errors because of the availability of calculators to students. Calculators may not always be available to students, the student may lack the knowledge of what operation to use on the calculators, and the student may not know if the answer derived upon is reasonable. Teachers should not assume children's computational errors are careless or random. In studies by Cox (cited in Cox, 1975) it was found that 5% of the addition errors and 13% of the subtraction errors were systematic errors and that the systematic errors are remedial. Furthermore it was found that without intervention systematic errors will continue for long periods of time. Systematic errors show a pattern of incorrect responses. According to Cox (1975), "systematic errors are those computational errors that occur in at least three out of five problems for a specific algorithmic computation" (p. 152). Random errors do not show specific patterns. Teachers must look for patterns in the errors their students make in the computational skills in math. The initial step toward remediation of a child's error in math is noting if the error is a systematic or pattern error. Research informs us little of the methods to use to remediate systematic errors. Teachers' judgments are needed in

selecting remedial activities for their students (Cox, 1975).

CHAPTER III

ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS

Goals and Expectations

One goal of the practicum was to provide human and specific material resources to remediate and or enrich math skills of target grade two students. The target students were the 25 second graders in the author's classroom needing remedial and or enrichment help as indicated on their math cards. Every student in the author's classroom was considered a target student. The target students were to receive increased remedial and enrichment help in the second grade math skills. Another goal of the practicum was to have the parents of the target students become involved with the remediation/enrichment of their children. The parents were to attend a math make-and-take workshop or participate in a parent-teacher conference where remedial or enrichment activities were explained. An additional goal of the practicum was to increase the number of target students who like math by involving them in remedial or enrichment activities (Appendix D).

Behavior Expected

Of the students targeted as needing either or both remedial/enrichment assistance in mathematics, at least 80% were to receive additional help beyond what was previously provided during the math period. The help was to be in the form of working with specific activities correlated to

the grade two math skills or working with resource people on specific math skills. Of the targeted students, at least 75% were to have parents become involved in remedial or enrichment activities by attending the math make-and-take workshop or by having a conference with the classroom teacher concerning the file of activities to be used with their children at home. On the Student Math Attitude Questionnaire (Appendix C), 48% of the target students responded that they either "never" or "seldom" liked math. It was a goal upon the completion of this practicum implementation that at least 75% of the target students would respond that they liked math within the range of "sometimes", "usually" or "always".

Measurement of Objectives

The evaluation instruments used to measure the objectives included teacher observations, checklists, a card file, parent-teacher conferences, a post questionnaire for students and a questionnaire for parents. The author used direct observation to see students using remedial/enrichment materials and receiving human resource help during the school day. A checklist of students receiving human resource help and a checklist of students using the provided remedial or enrichment materials which correlated with the county math program were maintained. The parent-teacher conferences were used as a means of communication between the writer and parents unable to attend the math make-and-take workshop. A count of parents in attendance at a math make-and-take workshop and parent-teacher conferences concerning math were kept by the writer. A card file (Appendix E) on math materials checked out for parents to use with their children at home was maintained. A post questionnaire (Appendix F) was given to the target students in order to find out if there was an increase in positive attitude of target students

towards mathematics. At the conclusion of the practicum implementation, the target students' parents were given a questionnaire (Appendix G) concerning the helpfulness of the math activities. The questionnaire was used to learn if the parents considered the math activities helpful and if the math activities increased parent involvement in working with their children.

By the time the practicum was implemented, 24 students were enrolled in the target class. During the implementation period one student withdrew and an additional student enrolled in the class during the same week. Twenty-five students were involved in the practicum. However, the 23 students that were in the target class for the entire implementation period of the practicum are the students included in the final analysis of the results of the practicum.

CHAPTER IV

SOLUTION STRATEGY

Discussion and Evaluation of Possible Solutions

Various solutions have been tried to help meet the needs of children in math. Among the solutions are out of school math clinics, microcomputers in the classrooms, parental involvement, peer teaching, and the use of recreational math games.

According to Scheer and Henniger (1982), the Diagnostic Math Clinic at Southern Illinois University at Carbondale involves parents in the process of improving the mathematics education of children. The mathematics clinic encourages parent involvement in providing children with mathematics remediation. There is communication between the teacher and parents concerning the child's achievement in mathematics. Clinicians meet with students two times a week for a one hour period each session. There are two conferences held during the remediation period concerning the student's achievement. The student, parent, and clinician are in attendance during the conferences. The first conference takes place after three weeks of remediation and the second conference occurs at the end of the semester. Clinicians provide materials and suggest games and activities parents can use at home to improve their child's mathematics achievement and to help parents participate in their child's mathematics education. The parents' involvement in the clinic frequently helps

children improve their attitudes. The Diagnostic Math Clinic at Southern Illinois University at Carbondale appears to extensively involve parents in the remediation of their children. The clinicians are teachers, graduate students, and consultants who have taken a three-credit course at Southern Illinois University on diagnostic and prescription procedures in school mathematics.

The diagnostic math clinic, while appearing to be a worthwhile idea, was not the solution to the practicum problem of helping the teacher provide the remedial and enriched help second grade math students needed at Calooosa Elementary. Such a clinic does not exist in Lee County, Florida. The solution of the practicum problem had to be one that involved little or no additional expense of existing school funds.

According to Suydam (1984), with the introduction of microcomputers having a computer in the classroom is now more than a dream. From the research of the past 20 years, it is known that computers can be used effectively in mathematics instruction. In 1977, computer literacy was one of the skill areas emphasized by the National Council of Supervisors in Mathematics. Furthermore, in 1978 the National Council of Teachers of Mathematics took the position that educators should be aware of computers as instructional tools. In mathematics, the computer can be used for drill and practice, games, tutoring, programming, and problem solving. Diagnostic and prescriptive techniques have been used and remediation and enrichment work can be provided. Hennemann and Hennemann (1983) believe that math concepts and skill development can be greatly increased through the use of calculators and computers. They suggest using calculators and computers after manipulatives have been used.

There are several microcomputers in Calcoca Elementary School. However, with the school having 34 classroom teachers, each class had a computer for a total of nine weeks each school year. At Calcoca Elementary School using computers was not the solution to the problem of providing remedial/enrichment assistance to target students. The microcomputers have been used on a rotation basis at the school. There have been grading periods when computers were not in second grade classrooms. There was also a lack of mathematics software in the school correlated to all the second grade math skills.

While computers would not be able to have an impact on the solution of this practicum's problem, the use of calculators in the target students' classroom was feasible. The author decided to make use of calculators in some of the proposed remedial/enrichment activities (Appendix D).

According to Hollis and Felder (1982) recreational mathematics is a method by which children through play obtain math concepts and skills. The play includes games and puzzles. Hollis and Felder believe recreational mathematics is more valuable than workbook exercises in effectively teaching young children since the children seem to enjoy playing games and are involved in following directions, rules, and problem solving. In studies conducted by Bright, Harvey, and Montague (cited in Hollis and Felder, 1982) it was shown that games help children retain skills.

Recreational mathematics can play a role in the solution to the problem of this practicum. The author proposed to use teacher-made, student-made, and parent-made activities which included games and puzzles in the implementation of the practicum. The students used some of the activities independently and others under the direction of a volunteer.

Sharpley, Irvine, and Sharpley (1983) assessed the effectiveness of

grade six and grade five students tutoring grade three and grade two children in mathematics operations. The second and third grade students were tutored one-to-one, thirty minutes a day, four days a week over five weeks. The mathematics operation scores of the tutees were higher than the control group of nontutee children. The tutors and tutees benefited academically. The overall reaction of the tutors, tutees, parents and teachers towards the cross-age tutoring program was positive. However, some teachers felt the tutoring sessions were too long. The tutors included high and low achievers. Administrators and teachers have to be aware of the details involved in a cross-age tutoring program such as scheduling, student compatibility, guidance, planning, supervision, accomodations, recordkeeping, and providing materials.

The use of cross-age tutoring was practical as a partial solution for the practicum problem. The author obtained tutors from the older students enrolled in the gifted program. As part of their learning program, the gifted students were involved in community service and leadership roles. The gifted students were putting their social processing skills into practice. The gifted students were available two days a week for tutoring for thirty minute periods.

Clarkson (1975) states that by teachers observing peer teaching, teachers can learn to respect the methods students use to arrive at their answers before trying to teach children more efficient methods of obtaining the answers. By observing the cross-age tutoring, one may see some ways older children are able to help younger children understand math concepts.

Nedler and McAfee (1979) report that data from intervention programs indicates that when parent involvement was emphasized in programs, student

achievement was higher than a comparison group. Make-and-take workshops involving parents have been used to explain and demonstrate how children learn. Nedler and McAfee provide guidelines that should be followed at the workshops. The activities selected for the workshop should be related to the needs of the children. They should be easy to make and economical as well as appealing to children.

Moles (1982) discusses parent involvement in children's education. Parent involvement encounters obstacles such as parents' and teachers' family commitments and time. Moles states that it appears that the parents' educational level has no connection with their willingness to help their child or ability to use at-home instructional techniques. Working mothers are just as able to work with their children as unemployed mothers. In a review of studies by Henderson (cited in Moles, 1982), the form of parent involvement does not appear to be critical as long as the involvement has been carefully planned and thorough.

According to Cervone and O'Leary (1982) not all parents can play an active role in their children's education. This may be due to cultural, language, and economic barriers. Teachers who want parents involved must lay the groundwork for their involvement in the classroom. Some parents are ready to volunteer and others, the majority, are not. Parents need preparation to feel comfortable. There are few activities that will have 100% parent involvement. Parents need to be moved along a continuum from passive to active participants.

By the author of this practicum having the parents involved in a make-and-take workshop or parent-teacher conference concerning math, it was believed that the parents would feel more comfortable in remediating/enriching their children in math. Involving parents was one of the solutions

utilized in this practicum.

Description and Justification for Solution Selected

The solution the author implemented was providing human and material resources to enrich and remediate the math skills of grade two students. The human resources were Major Work Area (gifted) students attending Calocoa Elementary School and parent volunteers. The material resources were teacher-made, parent-made, and student-made materials. The specific remedial/enrichment activities (Appendix D) have been organized by the author to correlate with the grade two math program. Remedial activities used in skills 7, 12, and 17 are based on a work by Overholt (1976). The remainder of the activities are activities the writer has previously used and has found successful and new activities the writer has implemented with this practicum.

Providing human and material resources to enrich and remediate target grade two students was an appropriate solution because it filled a gap in the grade two math program. By having the file of activities, the teacher had readily available activities for both remediation and enrichment. The file saved the teacher time looking for activities to present to the students. By saving the teacher the time needed to search for specific activities, the teacher had time to match the remedial/enrichment activities to the students to use independently, through cross-age tutoring, or parent volunteers. Therefore, the author believed the goal of 80% of the students obtaining increased remedial/enrichment help would be met because materials would be available, time would not be taken up designing them, and helpers would be provided to work with the students.

The goal of parent involvement was justified because the parents of

Calocoa Elementary were involved in many school activities. During the school year parents were invited to two open houses, a second grade level program, and a second grade level luncheon. Over 50% of the students in the author's target class had parents that attended these functions. Since the parents had been involved in the above mentioned activites, the author believed the parents would become involved in the remediation/enrichment of their children in math. Before the practicum implementation the target students' parents were not involved with their children's school math on a regular basis as the students did not have math homework on a regular basis. The parents had been requested to review the weekly packet of papers their children take home each Friday and help their children as needed.

Report of the Action Taken

In order to help parents remediate and enrich their children in math, the author presented a math make-and-take workshop to the parents during the first week of March, 1985. The target students sat with their parents during the workshop. The target students not having parents in attendance at the workshop worked on math activities with the prep aide in a pod area adjacent to the classroom.

The workshop was divided into three 30 minute time periods. During the first time period the author briefly discussed the grade two math skills (Appendix A). The author explained that the children were tested after studying a particular skill. The parents were informed that if a student failed to master a particular skill he/she would need some remedial help and if the student mastered the skill he/she was eligible for enrichment material. The parents were informed of the remedial/enrichment help their children were receiving at school. Most of the workshop time

period was allocated for having the parents make some of the remedial/ enrichment activities their particular child needed. The author furnished the materials needed for the workshop. A folder of math activities was distributed to each parent. During the last week of February, 1985 the author sent a note home to the parents inviting them to the workshop (Appendix H). From the responses returned, the author was able to decide which particular remedial/enrichment activities were to be made during the workshop. The target students and their parents worked on the math activities together in class. During the second 30 minute time period, the target students were dismissed for their physical education class. While the target students were out of the classroom, the writer continued to discuss the grade two math skills, had a question and answer period for parents, and had individual discussions with each parent in attendance. Parents were asked if they would like to volunteer to help remediate/enrich students at school. When the target students returned for the third time period, the parents and children continued to make or play math activities. The author had individual conferences with parents unable to attend the workshop and explained the file of activities to the parents.

Having parents become involved in the remediation and enrichment of their children at home helped fill the void of needed personnel. In addition, the author wanted to acquire volunteers that were available during the school hours to remediate and enrich target students. Since many of the author's target students have parents working during school hours, the author looked to another source for volunteers. The author decided to have some of the Major Work Area (gifted) students beyond second grade tutor the target students. The gifted students were available to tutor the children on Wednesday and Thursday for a thirty minute period each day.

The parent school volunteers tutored on Tuesday for 45-60 minutes. The author met with the gifted students and parent volunteers and explained the math activities to them. The gifted students and parent volunteers worked with the target students on a one-to-one basis and a small group basis.

The gifted students helped fill a personnel gap as well as did the parent volunteers. The target students were helped by the volunteers and material activities as needed. The need was based on the students' test results, work in class, and teacher judgement.

When individual or small groups of target students met with volunteers or major work area students, the tutoring sessions lasted approximately 15 minutes for the individual or small group. The sessions took place during the afternoons in the target students' classroom or pod area immediately outside of the classroom. The tutoring sessions were conducted during some of the 55 minute math period (when drill work was being conducted) and during the spelling and language periods. A total of 12 gifted students were used during the implementation period of the practicum. There were duplicate copies of the remedial/enrichment materials prepared in order to allow more than one student at a time to utilize a needed activity.

The gifted students worked out well. Third and fourth grade gifted students were the tutors. The students chosen to be the tutors were selected by the teacher of the gifted in the school after consulting with the writer. The selection was based upon their social processing skills. The writer met with the gifted students during the last week of February, 1985 to explain the activities they would be doing with the target students. The gifted students tutored the target students from the first week of

March, 1985 through May, 1985. Two to three gifted students would come to the classroom for the tutoring session. The gender of the tutors was not taken into account in the selection process. There were times when all the tutors arriving at the class were fourth grade boys. When this occurred class members would let out expressions of excitement. Some of the students would giggle, whisper, and gasp when the boys arrived. This did not occur when only girls came to tutor or when there was a combination of female and male tutors. The writer resorted to having less fourth grade boys coming to the class at the same time. Another difficulty was encountered one day when one of the target students gave a correct answer in the tutoring session and a third grade gifted student questioned it. The target student's answer was correct. After the incident occurred, the writer had the advanced target students work with the fourth grade tutors.

During the first week of March, 1985 target students began taking math activities home. Math activities were checked out to students through the end of May. Also within that same time period the math activities were discussed and used by two parent volunteers.

During the last week of May, 1985 a post questionnaire (Appendix F) was given to target students in order to learn if there was an increase in positive attitudes towards mathematics in target students. In addition, at the end of May, target students' parents were given a questionnaire (Appendix G) concerning the helpfulness of the math activities.

Learning is reinforced by providing children with scores and correct answers immediately (Suydam and Dessart, 1976). When target children used the calculators, had volunteers tutor them, and played self-checking games, they were receiving immediate feedback. By having target students receive individual or small group attention, make and play math activities, and

being provided challenge, the author believed the goal of having 75% of the students liking math by the end of the implementation period would be achieved.

CHAPTER V

RESULTS, CONCLUSIONS, AND RECOMMENDATIONS

Results

This practicum involved finding a solution to the problem concerning the lack of time and resources grade two classroom teachers had to remediate and enrich math skills of second grade students. The target population was the writer's grade two class that consisted of 25 students in a public school setting. Two of the 25 students were not enrolled in the class during the entire implementation period and are not included in the final results. However, one of the students not included in the results had a parent that attended the math workshop. This practicum was designed to increase the amount of remedial/enrichment help target grade two students received in mathematics, have target students' parents become involved in the remediation and enrichment of their children, and to increase the number of target students who like mathematics. The implementation period was from the first week of March, 1985 through the last week of May, 1985.

The writer hoped to achieve three goals as a result of the practicum implementation. One goal of the practicum was to provide increased human and specific material resources to remediate and or enrich math skills of target grade two students. All six grade two teachers were given a questionnaire concerning the math program (Appendix B). On question 8 all six teachers responded that they did not have specific remedial/enrichment

activities organized for each of the grade two math skills tests. The writer compiled remedial/enrichment math activities (Appendix D) and correlated them to the grade two math skills (Appendix A). One objective of the practicum was to have at least 80% of the target students receiving additional remedial/enrichment help in mathematics beyond that previously provided to them. Prior to the practicum implementation, the classroom teacher attempted to meet the remedial/enrichment needs of individual students without specific activities related to the grade two math skills tests. By the end of the practicum implementation period 100% of the 23 target students received increased remedial enrichment help in mathematics. Every student worked with some of the math materials (Appendix D), all students received tutorial help from parent volunteers and gifted students at school and all 23 target students received help at home from their parents during the practicum implementation period. Table 1 indicates the number of times each of the 23 target students received human resource help. The correlated material resources were used by the human resources while tutoring the target students.

Table 1

Number of Times Target Student Received Human Resource Help

Student	Parent Volunteers	Gifted Tutors	Parent Help[a]
A	6	7	1
B	8	8	5
C	9	7	4
D	7	8	2
E	8	2	3
F	6	3	4
G	5	7	2
H	7	3	1
I	7	7	3
J	6	5	2
K	6	7	3
L	7	8	4
M	4	4	1
N	8	8	3
O	7	5	4
P	7	5	4
Q	7	6	3
R	4	4	3
S	4	7	1
T	5	8	2
U	5	3	1
V	4	9	1
W	3	5	2

Note. Materials used by human resource help were the correlated remedial/enrichment activities (Appendix D).

[a]Parent Help refers to the number of times target students took math activities home to work with their parents.

The 23 target students received human resource help, beyond what was provided by the classroom teacher, nine or more times during the practicum implementation period. Of the 23 target students, 18 of them received human resource help 12 or more times during the implementation period.

A second goal of the practicum was to have parent involvement in the remediation/enrichment of the target students. This goal was met by having parents become involved in a math make-and-take workshop, by having a conference with parents unable to attend the math workshop, and by having students take math activities home. Of the 23 target students included in the results, the writer expected that 75% of them would have parents attending the math make-and-take workshop or the parents would have a conference with the writer concerning the math activities to be used at home. Parents of nine target students attended the math make-and-take workshop and the writer had conferences specifically concerned with the math activities with nine additional parents for 78% parental participation in the math workshop or conferences. Some math activities were also sent home with target students whose parents did not attend the workshop or have a conference with the writer concerning the activities. All target students took math activities home at least one time to work with their parents (see Table 1) which resulted in 100% parent participation.

The third goal of the practicum was to have an increase in the number of students having a positive attitude towards mathematics. On the Student Math Attitude Questionnaire (Appendix C) given prior to the practicum implementation period 12 of the 23 target students responded to question 3 that they liked math within the range of sometimes, usually, or always while 11 of the target students seldom or never liked math. Prior to the practicum implementation only five students responded that they always

liked math. At the end of the practicum implementation period the target students were given a post questionnaire (Appendix F). In response to question 4 concerned with liking math, all 23 students responded that they liked math within the range of sometimes, usually, or always. Of the 23 target students responding, 15 responded that they always liked math, three responded that they usually liked math, and five responded that they sometimes liked math. The result was that 100% of the target students indicated a positive attitude towards mathematics within the range of sometimes, usually, or always.

While responses to question 4 on the post questionnaire (Appendix F) were used by the writer to measure whether or not the third goal of the practicum was achieved, the first three questions were used by the writer to learn how the target students felt about receiving the additional resource help provided to them. On question 1 all 23 target students responded within the range of sometimes, usually, or always that they liked receiving the extra help in math. On question 2, concerning playing with math activities at home, 22 of the 23 students responded that they liked playing math activities at home sometimes, usually, or always. Concerning question 3, 22 of the 23 students responded that their parents had helped them within the range of sometimes, usually, or always with math during the semester of the practicum implementation while one student responded that his parents seldom helped him.

Conclusions

The three goals the writer proposed for the practicum were met. Concerning the first goal of providing increased remedial/enrichment resources for the target students, the writer expected at least 80% of the 23 target

students would receive increased help. The practicum implementation resulted in 100% of the target students receiving increased resource help in the form of materials, parent volunteers, cross-age tutors, and parental assistance. Referring to the figures provided in Table 1, 18 of the 23 target students received human resource help 12 or more times during the implementation period. This help was in addition to the help provided to them by the writer. The smallest number of times students received additional help was nine times. The writer was able to make use of all the human resources provided. Having the correlated math activities (Appendix D) prepared and available for use when the help arrived was time saving for the writer, tutors, and volunteers.

The goal of having parents of target students becoming involved in the math remediation/enrichment of their children was also met. The writer expected 75% of the target students to have parents either become involved in the math make-and-take workshop or have a conference with the writer concerning the math materials. Of the 23 target students, nine had parents attending the math workshop and an additional nine had parents confer with the writer concerning the math activities. While 78% of the target students had parents that became involved with the math workshop or had a conference with the writer, 100% of the target students had parents that worked with them at home at least one time (see Table 1) with the correlated math activities.

According to Cervone and O'Leary (1982), parents need to be taken along a continuum from passive involvement to active involvement. In addition they state that there are few activities where there is 100% parent involvement. Having parents become involved with specific mathematics activities was the beginning of active involvement for the target students'

parents. The writer was pleased that every target student had a parent help his/her at least one time. Moles (1982) points out that parents' and teachers' schedules sometimes interfere with helping. Originally, 15 of the 23 target students had parents register for the math workshop. However, due to various reasons such as work, lack of babysitting services, or illness, six of the 15 parents were unable to attend. Knowing in advance that schedules cause difficulty the writer was not disappointed in the parental attendance at the workshop. The writer was able to work with nine parents for 90 minutes.

At the end of the implementation period, parents of target students were given a questionnaire (Appendix G) concerning the math activities. The writer received 15 responses to the questionnaire. All 15 of the respondents responded "yes" to both questions. The parents found the math activities helpful in working with their children and the activities helped the parents become more involved than previously during the school year with their children's math work. The writer expected at least 51% of the parents responding to the Parent Questionnaire (Appendix G) to respond "yes" to the two questions concerning the helpfulness of the math activities. The writer was quite excited to learn that 100% of the respondents found the math activities helpful.

The goal of obtaining a positive attitude in the target students towards mathematics was met. Instead of 75% of the target students having a positive attitude towards math, 100% of the students expressed a positive attitude. The children were always eager to work with the gifted students or parent volunteers. In addition, the students enjoyed taking the math activities home.

Recommendations

The writer was quite satisfied with the results of the practicum implementation. However, the writer believes that parent involvement should begin sooner than the third grading period of the school year. The end of the first semester would be an ideal time for a math workshop for parents. Several math skills have been introduced by the second semester and the classroom teacher should have a detailed record of each student's strengths and weaknesses. During the first semester volunteers could make the math activities to be used by the students. Several copies of each math activity should be available. Some math activities became broken when students took them home. A couple of thermometers broke and replacements had to be found. Sometimes students left activities home causing other students to wait more than one day to take the game home. There were duplicate copies of activities but there were not enough at times.

The writer suggests that babysitting service should be made available for parents of preschool children during the workshop period. Some parents did not attend the math workshop because they could not obtain a babysitter. One parent did bring her infant. The infant slept through the workshop.

Student tutors should be screened. The teacher using the tutors should check on the prospective tutors' communication skills and math skills.

Dissemination

At the end of May, 1985 the writer shared the results of her practicum work with the grade two teachers in the writer's school. Upon the approval of the practicum report the writer will be giving copies of the correlated math activities to each of the grade two teachers in her school and to interested first and third grade teachers.

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APPENDIX A

GRADE TWO MATH SKILLS

INDIVIDUAL MATH RECORD CARD

Name _____ School _____ Grade _____

Codes: ☐ needed skill ☑ introduced ☒ mastered ☒ re-introduced ☒ re-mastered

Teacher _____ Level 2

Placement was determined by teacher judgment based on: Math Inventory Previous Math Record

Skill	Fundamental/Preventive		Developmental		E
1. NUMBER OF OBJECTS IN A SET	To 100				
2. NUMBER PATTERNS IN SHORT SEQUENCES TO 100	Numeral before, after, between—to 100		Less than 1,000		
3. READ AND WRITE NUMBERS FROM ANY STARTING POINT (PLACE VALUE)	to 200		To 500		
4. GREATER THAN-LESS THAN	To 100		To 500		
5. READ NUMBER WORDS FROM ZERO TO TWENTY	To 10		To 20		
6. ORDINAL POSITION	Ten objects		Fifty objects		
7. ADDITION USING TWO 1-DIGIT NUMERALS	To 18				
8. ADDITION USING THREE 1-DIGIT NUMERALS	To 18		Beyond 18		
9. ADDITION USING TWO 2-DIGIT NUMERALS	To 18 (no regrouping)		To 100 (one regrouping)		
10. ADDITION USING A 1-DIGIT AND A 2 OR 3-DIGIT NUMERAL	To 18		To 100 (one regrouping)		
11. ONE-STEP WORD PROBLEMS REQUIRING ADDITION	To 18		Beyond 18		
12. SUBTRACTION EQUATIONS	Through 9				
13. SUBTRACTION USING 1-DIGIT NUMERAL FROM A 2-DIGIT NUMERAL	Without regrouping		With regrouping		
14. SUBTRACTION USING 2-DIGIT NUMERAL FROM A 2-DIGIT NUMERAL	Without regrouping		With one regrouping		
15. ONE-STEP WORD PROBLEMS REQUIRING SUBTRACTION	To 18		Beyond 18		
16. GROUP OBJECTS INTO SETS OF EQUAL AMOUNTS	12 or fewer objects		12 or more objects		
17. PRE-MULTIPLICATION	Find products by making sets.		Add 3 or more like addends		
18. FRACTIONAL PARTS	Identify regions, halves, thirds or		Separate regions into halves,		

Skill	Fundamental/Preventive	Developmental	E
19. MEASUREMENT OF OBJECTS	Use inches and centimeters.	Read words: inch, foot, centimeter, ruler, meter, unit.	
20. GEOMETRIC FIGURES	Match geometric figures of the same size and shape.	Construct figures using line segments.	
21. SHAPES THAT ARE SYMMETRICAL	Identify an object that is symmetrical.	Make symmetrical shapes.	
22. USE A CALENDAR	Identify the date in month, day, and year.	Number of days in a year, leap year. Name months in order.	
23. TELL TIME	On the hour and half hour.	Draw hands on a blank clock to denote the hour, half hour or quarter.	
24. MONEY	Use pennies, nickels, dimes, quarters, and half dollars.	Use a collection of coins not to exceed 50 cents.	
25. WORD PROBLEMS INVOLVING MONEY (ADDITION)	Two purchases totaling no more than 99 cents (without regrouping).	No more than 99 cents.	
26. WORD PROBLEMS INVOLVING MONEY (SUBTRACTION)	Real world problems - Subtraction - not more than 99 cents (without regrouping).	No more than 99 cents.	
27. READ AND MAKE GRAPHS	Read horizontal/vertical picture and/or bar graphs.	Make horizontal/vertical picture and/or bar graphs.	

APPENDIX B

TEACHER QUESTIONNAIRE CONCERNING MATH PROGRAM

TEACHER QUESTIONNAIRE CONCERNING MATH PROGRAM

1. Do you have any students working below expected second grade level standards in math? _____Yes _____No

2. Approximately how many students need to be remediated on a math skill after being administered a math skill test? _____

3. Who remediates the students that have not mastered a specific math skill? ___You ___Aide ___Others

4. Does your aide have much time($1\frac{1}{2}$-3 hours a week) to remediate or enrich math skills of your students? _____Yes _____No

5. Do you feel you have the time during the allocated math period to meet the individual math needs of your students? _____Yes _____No

6. Do you give math homework? _____Yes _____No

7. Do you think a "pull out" math program would be beneficial to students in second grade? Why? _____Yes _____No

_____

_____

_____

8. Do you have specific remedial or enrichment math activities made or organized for each skill level tested on the county math tests? _____Yes _____No

APPENDIX C

STUDENT MATH ATTITUDE QUESTIONNAIRE

STUDENT MATH ATTITUDE QUESTIONNAIRE

	Never	Seldom	Sometimes	Usually	Always
1. Is math difficult for you?	1	2	3	4	5
2. Would you like to have extra help with math?	1	2	3	4	5
3. Do you like math?	1	2	3	4	5
4. Would you like to play math activities at home?	1	2	3	4	5
5. Do you think you need harder work in math?	1	2	3	4	5
6. Do your parents help you with math?	1	2	3	4	5

APPENDIX D

REMEDIAL AND ENRICHMENT ACTIVITIES CORRELATED TO GRADE TWO MATH SKILLS

PROPOSED REMEDIAL AND ENRICHMENT MATHEMATICS ACTIVITIES

Skill 1
Number of Objectives in a Set

Remedial Activity

Have students count 100 pennies by ones. Have the students separate the pennies into sets of 10 and count the pennies in each set.

Enrichment Activity

Have students count 200 pennies by fives and tens. Have the students divide the pennies into sets of 20 and 50 pennies each.

Skill 2
Number Patterns in Short Sequences

Remedial Activity

Have the students practice writing numerals in short sequences up to 1000 by using a small chalkboard or slate and read the numerals to a volunteer.

Enrichment Activity

Have the students practice writing numerals in short sequences from 1000 to 1500 by using a small chalkboard or slate.

Skill 3
Read and Write Numbers from any Starting Point(Place Value)

Remedial Activity

Have students play a place value card game. Obtain 20 index cards. On 10 of the index cards write any numeral to 200 on each card. On the

additional 10 cards write the corresponding place value equivalents for the numerals written on the first 10 index cards. All 20 cards are shuffled and spread across a table. The student is to match a numeral card with its place value equivalent. The cards will be self checking by using a color code.

Enrichment Activity

The students will play the same card activity as stated in the Skill 3 remedial activity. However, the numerals and place value equivalents will be written to 999.

For example:

Color Code
5 hundreds 2 tens 3 ones

Color Code
5 2 3

Skill 4
Greater Than - Less Than

Remedial Activity

Give the students worksheets with greater than - less than problems. Have the students use manipulatives such as chips or cubes to show with one to one correspondence why one numeral is greater than another numeral.

Enrichment Activity

Give the students greater than - less than problems to 900 using a plastic slate to do the problems.

Skill 5
Read Number Words Zero to Twenty

Remedial Activities

Have the students practice reading numeral words on flashcards. One side of the card has a numeral through 20 written and the corresponding number of dots. The opposite side of the card has the word for the numeral.

Have the words zero to twenty written on language master cards. Have the students listen to the words on the language master.

Make clothespin cards. On one side of the tagboard card have a numeral written with dots drawn from the amount the numeral represents. On the opposite side of the card have the corresponding number of dots for each numeral written. The student is to clip the proper number of clothespins for each numeral word. There is to be a one-to-one correspondence to the dots.

Make a math jigsaw puzzle. Obtain or make a jigsaw puzzle of approximately 25 pieces. Write one numeral on the back of each puzzle piece. For the remedial activity, numerals written will be zero through 25 with no duplicates. Outline each puzzle piece in such a manner that the puzzle shape is outlined on a board. Write a corresponding number word on the outlined shapes on the board for each numeral written on the back of the jigsaw puzzle pieces. The student will read each number and find its matching number word on the puzzle board.

Enrichment Activities

The students will do the jigsaw activity as stated in the remedial activity. However the students will be responsible for matching number words and numerals to fifty.

Have the students look in newspapers, magazines, and directories for number words and write the corresponding numerals.

Skill 6
Ordinal Position

Remedial Activity

Cut out 10 pictures of houses from magazines. Paste them on tagboard in a straight row. Cut out 10 pictures of people. Stack the pictures of the people in a pile. Ask the students to place a person in each house, naming the house the person is being placed in by using an ordinal word.

Enrichment Activity

Place 50 or more different colored and shaped buttons or chips in a straight row. Have the students locate a specific button or chip by stating its ordinal position. This activity should be repeated several times.

Skill 7
Addition Using Two 1-Digit Numerals

Remedial Activity

Obtain two egg cartons and approximately 80 markers or dried beans for the cartons. Each egg space in the cartons will have a number written on it. In one egg carton the bottom row of egg spaces will be numbered 1 through 6 while the upper row will be numbered 7 through 12. In the remaining egg carton, the bottom row will be numbered 13 through 18. Index cards will be placed on the inside lids of the egg cartons to give directions to the student. The students will read a direction card that will tell them to place a certain number of beans or chips in a corresponding egg space. For example, the students will be instructed to place

seven beans in the corresponding egg space that has the number seven written on it. The student will then be instructed to place the seven beans in all of the two number combinations that are equivalent to seven. The student will make the combinations 1+6, 6+1, 2+5, 5+2, 3+4, 4+3, using the seven beans. The student will continue to find two number combinations for the sums two through eighteen by using one digit numerals.

Enrichment Activity

The students will be given timed worksheets. By using a cooking timer, students will set the time limit they feel they can complete 20 addition fact problems. The children will keep a record of their times. In between the timed worksheets, students will continue to study their addition flashcards.

The student is to use a calculator to find the sums to 18 by adding two 1-digit numerals and also by adding one 2-digit numeral and one 1-digit numeral. Prior to this activity students will be instructed in how to use calculators.

Skill 8
Addition Using Three 1-Digit Numerals

Remedial Activity

Obtain three dice. Have the students roll the three dice and give the sum of the dots shown on top of the dice.

Enrichment Activity

Obtain a deck of playing cards. Use the cards numbered 2 through 9. Shuffle the cards. Have the students draw three cards from the deck and give the sum of the cards.

Skill 9
Addition Using Two 2-Digit Numerals

Remedial Activity (No Regrouping)

Give the students 10 two 2-digit numerals to add without regrouping. Have the students use a number of manipulatives corresponding to the numbers being added together. The student will place the manipulatives next to the 2-digit numerals being added and will find the sum of the numbers by counting.

The students will attempt to add two 2-digit numbers on paper and then will check their work by using a calculator. Prior to this activity students will be instructed in how to use calculators.

Enrichment Activity

The students will be timed in adding two 2-digit numerals with pencil and paper and with calculators.

Skill 10
Addition Using a 1-Digit and a 2 or 3-Digit Numeral

Remedial Activity (No Regrouping and Regrouping)

For this activity the students will have the help of a volunteer and manipulatives. The volunteer will work one-to-one with students, having the students adding numerals with the use of manipulatives. The students will explain what they are doing as they add the manipulatives and the volunteer will correct as needed. Then the students will work the addition problems out on a chalkboard.

Enrichment Activity (Regrouping)

Students will be given problems involving regrouping to the hundreds place. The students will work the problems on plastic slates or small chalkboards.

Skill 11
One-Step Word Problems Requiring Addition

Remedial Activity

Obtain a gameboard that has several spaces on it. Prepare two sets of cards with one-step addition word problems. One set will be word problems that will have sums less than 10. Another set will be word addition problems with sums 11 through 18. The student will draw a card from one of the two sets. If the student solves the word problem he will move the number of steps designated on the card. Any person reaching the finish space first is the winner.

Enrichment Activity

The activity will be the same as the remedial activity, but the word problems will go beyond the sum 18.

Skill 12
Subtraction Equations

Remedial Activity (Through 9)

Make or purchase a jigsaw puzzle of approximately 25 pieces. Write a subtraction equation on the back of each puzzle piece. The subtraction equation will have differences through nine. Outline each puzzle piece in such a manner that the puzzle shape is outlined on a board. Write the corresponding subtraction difference on the board for each subtraction equation written on the back of the puzzle pieces. The student will answer the subtraction problem and put the puzzle piece on top of the difference written on the board.

Make punch-out figures. Draw faces of animals or people. Punch holes near the edge of the faces. Next to each hole write the minuend. Write the subtrahend in the center of the face. On the opposite side of the

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face at the corresponding punched hole write the difference. Have the students place a pencil in a hole by a minuend, subtract the subtrahend, and state the difference. The students will turn the face over to check their responses.

Enrichment Activity

Have the students solve subtraction equations through nine on a calculator under timed conditions.

Skill 13
Subtraction Using 1-Digit Numeral From a 2-Digit Numeral

Remedial Activity (With and Without Regrouping)

For this activity the students will have the help of a volunteer and manipulatives. The volunteer will work one-to-one with the students, having the students subtracting numerals with the use of manipulatives. The students will explain what they are doing as they subtract manipulatives and the volunteer will correct as needed. Then the students will work the subtraction problems on a chalkboard.

Enrichment Activity (With Regrouping)

Students will go beyond subtracting a 1-digit numeral from a 2-digit numeral. Students will subtract a 1-digit numeral from a 3-digit numeral with regrouping to the hundreds place.

Skill 14
Subtraction Using 2-Digit Numeral from a 2-Digit Numeral

Remedial Activity (With and Without Regrouping)

Students will subtract a 2-digit numeral from a 2-digit numeral with the use of manipulatives. A volunteer will guide the student through the regrouping through the use of manipulatives.

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Enrichment Activity (Regrouping)

Students will be timed in subtracting a 2-digit numeral from a 2-digit numeral with pencil and paper and with calculators.

Skill 15
One-Step Word Problems Requiring Subtraction

Remedial Activity

Obtain a gameboard that has several spaces on it. Prepare a set of cards with one-step word problems that involve minuends through 18. The student will draw a card from the set of cards. If the students solves the word problem he will move the number of steps designated on each card. The player reaching the finish space first would be disigmated the winner.

Enrichment Activity

The activity will be the same as the remedial activity, but the word problems will involve minuends beyond 18.

Skill 16
Group Objects into Sets of Equal Amounts

Remedial Activity (12 or Fewer Objects)

Present students with equal numbers of colored chips. Have the students group the chips into sets according to their colors.

Enrichment Activity

This activity is the same as the remedial activity except the number of chips will be increased to 20.

Skill 17
Pre-Multiplication

Remedial Activity

Obtain an egg carton and 30 counters or dried beans. Form sets by

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placing equal amounts of beans in a designated number of egg spaces. For example place 5 beans in one egg space and an additional 5 beans in another egg space. The students are to note that two sets of five form 10. The students will continue to form other equal sets.

Enrichment Activity

Make or purchase a jigsaw puzzle of approximately 25 pieces. Write three or more like addends on the back of each puzzle piece. Outline each puzzle piece in such a manner that the puzzle shape is outlined on a board. Write the corresponding sum on the board for each of the three or more addends written on the back of the puzzle pieces. The student will state the sum and place the puzzle piece on top of the sum written on the board.

Skill 18
Fractional Parts

Remedial Activity

Make four equal sized pizzas out of paperplates. Keep one pizza whole. Cut one pizza into thirds. Cut one pizza into halves. Cut one pizza into fourths. Have the students place the pizzas together and place them on top of the whole pizza. As the students are placing each cut pizza on top of the whole pizza, they will state the fractional part they are placing on top of the pizza.

Enrichment Activity

Have the students make five equal-size pizzas out of paperplates and cut them into halves, thirds, fourths, sixths, and eighths. Have the students compare the size of the fractional parts and decide which parts are greater than or less than other parts.

Skill 19
Measurement of Objects

Remedial Activities

Students will practice measuring specific objects in inches and centimeters. Some items to be measured will be notebook paper, desk tops, counters, and tables. In addition, students will measure the height of others. Rulers, a yardstick, and a meter stick will be available for students to use.

Enrichment Activities

Students will measure objects in units by using paper clips. They will measure the same objects in inches and centimeters.

The students will be presented with a drawing of a house. The students will measure the height and width of the house in centimeters and inches.

Reading temperatures will be taught as a form of measurement. The students will be taught how to read a thermometer. The students will read room temperatures, outdoor temperatures, ice water temperatures, and tap water temperatures.

Skill 20
Geometric Figures

Remedial Activities

Have students locate circles, squares, rectangles, and triangles in pictures.

Enrichment Activity

Have the students draw a picture using only squares, rectangles, triangles, and squares.

Have the students make a geometric design using only squares or tri-

angles.

Skill 21
Shapes that are Symmetrical

Remedial Activity

Have the students look for symmetrical shapes in magazines. Have the students fold and cut the shapes into equal parts.

Enrichment Activity

Have the students make symmetrical figures such as hearts, shields, triangles, and squares.

Skill 22
Use a Calendar

Remedial Activity

Ask the students to read the day, date, and year each day from a calendar or newspaper.

Enrichment Activities

Have the students look on a current calendar for the dates holidays are celebrated. The students should read the month and date for each holiday they are asked to locate on a calendar.

Have the students design a calendar for the current year.

Skill 23
Tell Time

Remedial Activities

Ask the students throughout the day the time for each hour and half hour indicated on the school or home clock.

Enrichment Activity

Have the students look at a television guide, read the time a specific program is to be televised, and move the hands of a clock to indi-

cate the corresponding time.

Skill 24
Money

Remedial Activities

For practice in recognizing a penny, nickel, dime, quarter, and half-dollar and the value of each, place the coins on a table and ask the student to pick up a specific coin and state its value. Have items marked one cents, five cents, ten cents, twenty-five cents, and fifty cents. Ask the students which coin would be needed to purchase the item. Expand this activity by having items for sale up to 99 cents. Provide the students with several pennies, nickels, dimes, and quarters. Have the students use various combinations of coins to purchase the items.

Enrichment Activity

Have students clip coupons out of the newspaper and count out the coins that indicate the money to be saved by using the coupons.

Skill 25
Word Problems Involving Money (Addition)

Remedial Activity (Without Regrouping)

Give the students oral and written problems involving purchases up to 99¢ without regrouping.

Enrichment Activity

Provide the students with word problems that involve three purchases totaling no more than 99¢.

Skill 26
Word Problems Involving Money (Subtraction)

Remedial Activity (Without Regrouping)

Give the students oral and written word problems involving one pur-

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chase being subtracted from 99 cents or less.

Enrichment Activity (With and Without Regrouping)

Give the students oral and written word problems involving two purchases being subtracted from 99 cents or less.

Skill 27
Read and Make Graphs

Remedial Activity

Have the students make horisontal and vertical picture/bar graphs. The students will make graphs indicating how students come to school, students' pets, boys and girls in class, and sunny and cloudy days.

Enrichment Activities

Have the students make graphs of indoor and outdoor temperature readings.

Teach the students how to make a line graph.

Have the students make a graph on the probability of getting heads or tails when flipping a coin.

APPENDIX E

CARD FILE

CARD FILE FORM

Name of Child _____

Math Skill _____

Activity _____

Parent _____

APPENDIX F

POST QUESTIONNAIRE FOR STUDENTS

POST QUESTIONNAIRE FOR STUDENTS

	Never	Seldom	Sometimes	Usually	Always
1. Do you like receiving the extra help in math?					
2. Do you like playing math activities at home?					
3. Have your parents been helping you with math this semester?					
4. Do you like math?					

APPENDIX G

PARENT QUESTIONNAIRE

PARENT INVOLVEMENT QUESTIONNAIRE

1. Have you found the math activities helpful in working with your child in math? Yes No

2. Do you feel that the math activities have helped you become more involved than previously this school year with your child's math work? Yes No

APPENDIX H

PARENT LETTER

THE SUM IS, PARENTS MAKE THE DIFFERENCE

Dear Parents:

YOU ARE INVITED
TO A MATH
MAKE - AND - TAKE WORKSHOP

WHO: Parents of children in Mrs. Beluschak's class

WHEN: March _____ from 9:30 A.M. - 11:00 A.M.

WHERE: Your child's classroom

WHY: To make math activities for your child to use at home
Learn about the grade 2 math program

COME AND
JOIN
THE FUN

YES_____ I WILL BE ABLE TO ATTEND THE MATH MAKE - AND - TAKE WORKSHOP

Parent's Signature _____